

April 1892.

Mr. Mee, Transit of Titan.

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Conjunction of the Satellites with the Ring.

The following observations of the satellites of *Saturn* have been made. These observations will be continued. Absence from the Observatory during the latter part of January, February, and a part of March has prevented more observations of the satellite so far this year.

Conjunction of Tethys and following end of Ring.

| 1892. | h | m | s | | | | | | |
|---------|----|----|----|---|--|--|--|--|--|
| Jan. 10 | 14 | 9 | 18 | Tethys $\frac{1}{2}$ thickness of wire following. | | | | | |
| | 14 | 12 | 43 | " $\frac{1}{4}$ " " | | | | | |
| | 14 | 15 | 53 | Conjunction. | | | | | |
| | 14 | 19 | 28 | Tethys past conjunction by $\frac{1}{4}$ thickness of wire. | | | | | |
| | 14 | 22 | 58 | " " " $\frac{1}{2}$ " " preceding | | | | | |
| | | | | thickness of wire $0''44$. Mag. power 175 on 12 in. | | | | | |

*Conjunction of Rhea and following end of Ring.**Rhea North.*

| Jan. 22 | h | m | s | | | | | | |
|---------|----|----|----|---|--|--|--|--|--|
| | 15 | 28 | 11 | Rhea $\frac{1}{2}$ thickness of wire preceding end of Ring. | | | | | |
| | 15 | 31 | 31 | " $\frac{1}{2}$ " " " " | | | | | |
| | 15 | 35 | 31 | Rhea in conjunction with following end of Ring. | | | | | |
| | 15 | 42 | 21 | $\frac{1}{2}$ thickness of wire following end of Ring. | | | | | |
| | 15 | 47 | 21 | " 1 " " " " | | | | | |

In these observations the micrometer wire was made vertical to the ring. The moment of conjunction could be quite closely observed, as any displacement was easily seen by bisecting the satellite or the end of the ring.

Mount Hamilton:
1892 March 17.

Note on the Transit of Titan, 1892, March 11. By Arthur Mee.

This evening, with pretty fair definition, I had been observing the Moon, and afterwards (about 10.15) turned my $8\frac{1}{2}$ in. Calver equatoreal on *Saturn*. I immediately saw, a little way within the southern limb, and slightly east of the meridian, a dark spot, and almost immediately afterwards a brown spot still further to the east. I watched the pair with powers 200–400 till I had to leave the telescope. The dark spot seemed central at 10.30. Looking up the almanac next day, I found the dark spot was the shadow of *Titan* in transit, and it at once occurred to me that

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the brown spot must be the satellite itself, and, as I can find no record of a similar previous observation, I venture to forward this note, hoping that others with ampler opportunities will tell us more of a deeply interesting if not unique phenomenon.

Llanelli :
1892 March 11.

Notes on the Spectrum of the Great Sun-Spot Group of 1892 February. By Prof. K. D. Naegamvala, M.A.

While examining the large spot group, which made its appearance on the Sun's disc early last month, for the widened lines in the region *b* to F, on the 12th of the month, I found that, besides an unusual thickening of the lines both in intensity and number, the F and C lines were reversed at the centres of the two chief nuclei of the group. The absorption was so intense that the lines were frequently obliterated in the nuclei, and I had to displace the nuclei from the slit and observe the widenings in the neighbouring portions of the spot.

While repeating the observations on the morning of the next day, at about 10.30 Madras mean time (5.10 A.M. G.M.T. nearly), with the slit crossing both the nuclei, it was found that the reversed lines of the day previous had greatly increased in intensity. During observation, the C line gradually extended from one nucleus to another, and was displaced towards the more refrangible side by about its own thickness. The F line was also similarly affected, but with it the displacement was greatest in the space *midway between* the two nuclei. Subsequently, when the slit was placed slightly off the centre of the preceding nucleus (A) with the fine motion in declination, a small *dark* prominence was observed on the F line towards the less refrangible side, a little preceding A, and tipped downwards in the spectroscope towards the spot. On bringing the spot (A) again on the slit it was found that the F line in the spot had assumed a lozenge shape and was also deflected towards the more refrangible side by a distance estimated to be equal to the thickness of the F line. To make myself certain of the existence of the dark prominence, the spectrum was adjusted for the C line, when the black prominence was again observed, but the tip was now deflected away from the spot. That the appearance was not due to any defect or flaw in the instrument was evident from the fact that the appearance was not presented in any other part of the spectrum examined (C to F), except on the two H lines.

Besides the lines C and F, the lines D₁ D₂ D₃ b₁ b₂ b₃ b₄ were found reversed, and on pointing the observing telescope to the region near G it was ascertained to be similarly affected.

The *b* lines, though found reversed, were not observed